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10/795,879	03/08/2004	George Carver	61404-1100	2091
24504 7590 03/01/2010 THOMAS, KAYDEN, HORSTEMEYER & RISLEY, LLP 600 GALLERIA PARKWAY, S.E. STE 1500 ATLANTA, GA 30339-5994				
EXAMINER MONDT, JOHANNES P				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/795,879

**Applicant(s)**

CARVER ET AL.

**Examiner**

JOHANNES P. MONDT

**Art Unit**

3663

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 November 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 3-10, 13-34, 48-51, 53-58 and 69-71 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3-10, 13-34, 48-51, 53-58 and 69-71 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-940)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. Another examiner (Johannes Mondt, in the same Art Unit as the previous examiner) has assumed responsibility for the examination of the application.
2. In view of the Appeal brief filed 11/25/09 prosecution is herewith re-opened. New grounds of rejection are herewith set forth. To avoid abandonment of the application, appellant must exercise one of the following two options:
  - (1) file a reply under 37 C.F.R. 1.111 (if this Office action is non-final) or a reply under 37 C.F.R. 1.113 (if this office action is final); or
  - (2) initiate a new appeal by filing a Notice of Appeal under 37 C.F.R. 41.31 followed by an appeal brief under 37 C.F.R. 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 C.F.R. 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.A Supervisory Patent Examiner (S.P.E.) has approved of re-opening prosecution by signing below:

/Jack W. Keith/

Supervisory Patent Examiner, Art Unit 3663

***Information Disclosure Statement***

3. As acknowledgment that the current examiner has considered all items listed in the Information Disclosure Statements filed 6/17/04 and 6/28/07 please find signed copies of the respective Forms PTO-1449 enclosed with this action.

***Drawings***

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims or said features should be removed. Therefore, the limitation of claim 7, "the plurality of tubes includes a plurality of flat load bearing surfaces at the corners of respective ones of the tubes, the flat load bearing surfaces on the first one of the tubes engaging the plurality of flat bearing surfaces on the second one of the tubes" must be shown or the features canceled from the claims (see claims 7, 17, 27, 28 and 50). Regarding said limitation: as can be seen in FIG. 5, connection of rod 8, 12 with rod 20, 22 by pin cannot connect flat bearing surfaces of corners 60 and 62 together as claimed in claims 7, 17, 27, 28 and 50 and as shown in FIG. 9. The apparatus as shown in FIG. 5 cannot operate as shown in FIG. 8, 9 as disclosed in Specification and as claimed. Figure 5 should be amended to conform with Figure 8.

**No new matter should be entered.**

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet,

and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. ***Claim 51*** is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation dependent upon claim 48 in which in apparent addition to the rods recited in claim 48 it is recited that the apparatus further comprises "at least one solid rod disposed between the adjacent pairs of the tubes" has not support in the original specification including original claims, because no solid rod

other than those and as recited in dependent claim 51 is supported by a written description, and thus forms new matter.

6. **Claim 53** is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation "wherein the first and second rods are welded into the recesses" has no written support in the original specification including original claims and hence forms new matter. That pins or components thereof are welded onto other structures is a different issue.

7. **Claims 69-71** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation "each of the recesses being configured to receive the rod from a lateral direction...." in the independent claim does not find written support in the original specification including original claims and drawings. The limitation described at best a structural configuration of the final product capable of being made in a specific manner involving lateral approach of the rod, which is not disclosed and hence constitutes new matter.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. **Claim 51** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The metes and bounds of the claimed invention are vague and ill-defined due to lack of adequate description through the introduction of new matter as set forth in section 5 above, rendering the claim indefinite.

9. **Claim 53** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The metes and bounds of the claimed invention are vague and ill-defined due to lack of adequate description through the introduction of new matter as set forth in section 6 above, rendering the claim indefinite.

10. The term "rigidly" in **claims 55 and 56** is a relative term which renders the claim indefinite. The term "rigidly" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

11. **Claims 69-71** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The metes and bounds of the claimed invention are vague and ill-defined due to lack of adequate description through the introduction of new matter as set forth in section 7 above, rendering the claim indefinite.

12. **Claim 56** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant

regards as the invention. The metes and bounds of the claimed invention are vague and ill-defined due to lack of adequate description through the introduction of new matter as set forth in section 8 above, rendering the claim indefinite.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later



invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. **Claims 1, 3-10, 13-34, 48-50, 53-55, 57-58 and 69-71** are rejected under 35 U.S.C. 103(a) as being unpatentable over Machado et al (US 5,245,641) (made of record by applicant in IDS filed 6/17/04; item I) in view of Minshall et al (WO 00/72326 A1) (as first made of record by applicant in IDS filed 6/28/2007). N.B.: The rejection is provided subject to the noted indefiniteness under 35 U.S.C. 112, second paragraph, as set forth in sections 8-12, to the best of examiner's understanding.

*Machado et al teach a container for storing or transporting spent nuclear fuel, the container comprising:*

a plurality of tubes C ((Figure 4 and col. 3, l. 64 – col. 4, l. 2) that receive spent nuclear fuel assemblies, each tube 44 having four sidewalls 46, 48, 50, and 52 (loc.cit.) or walls 34/54 (col. 3, l. 50+ and col. 4, l. 9+), and four corners defining a rectangular cross section (Fig. 4), the four sidewalls forming a continuous inner sidewall (Fig. 4);

an attachment means for attaching respective pairs of a plurality of corners of the tubes to each other, the attachment means comprising a plurality of recesses in respective ones of the corners (said recesses formed by the interruption of 54 at the corners: see Figure 5) and a plurality of rods 68 (col. 4, l. 39-48) that are positioned between respective engaged ones of the corners (Figure 5), wherein each of the rods is a cylinder having a single cylindrical wall (namely: wire over the length of the L sections' gap or recess (loc.cit.), the cylindrical wall of each of the rods contacting at least two recesses associated with at least two of the tubes (Figure 5).

*Machado et al do not necessarily teach the limitations*

*"at least one corner of a first one of the tubes engaging another corner of a second one of the tubes", "each engaging corner of the first and second ones of the tubes being formed from an intersection of a first sidewall and a second sidewall",*

although they do teach the first and second sidewalls being normal to each other (Figure 5), and the first/second sidewall of the first one of the tubes and the second sidewall of the second one of the tubes being in substantial alignment to each other (Figure 5).

*However, said limitations are nothing more than the result of a conventional hinge, having a barrel comprised by two knuckles extending from a separate leaf, as shown for instance by Minshall et al* who, in a patent document on a container for storage and / or transport of nuclear fuel elements, hence analogous art, teach locking pin 50 through rods (= projections 19, or, alternatively, projections 19 with grooves 32, 33 and 42,43; in both cases in recesses 9 in the sidewalls) so as to cause the associated corners of the tubes 3 to engage in corners formed from an intersection of first and second sidewalls (for instance 5d and 6e or 5f and 6f; Figures 2-3), as a solution for the problem of how to join the parts of the container together. See p. 1, l. 12+. Minshall et al teach as advantage the reduction of welding (p. 1, l. 13+ and page 3, l. 22+) and improved ability to withstand loads (page 3, l. 14+). *Combination* of the teaching by Minshall et al in the invention by Machado involves only the replacement of spacer wire 68 and adjacent welds by rods formed by projections 19 with grooves 32, 33 and locking pins 50, a replacement one of ordinary skill in the art of connectors

knows how to implement with high predictability of success. Furthermore, applicants do not disclose criticality in the manner in which the tubes are joined other than what is comprised in those advantages specifically disclosed by Minshall et al and discussed overhead, and other than through a mere hint at complying with NRC regulations, which is an obvious pre-condition for applying the invention at least within the USA, no specific other advantage or improvement of the invention as disclosed is indicated in the specification. Yet further, one of ordinary skill would deem it especially obvious to secure the connections between the cells C in Machado et al through a more comprehensive attachment means than cylindrical wires or rods 68 with welds if, as in the case of the embodiment of Figure 5, the distance between the cell walls at least initially is greater than the width or bore of the wire 68, because more static force is required in said embodiment than otherwise so as to force the cell sidewalls together.

In conclusion, the claim is obvious as nothing more than the substitution of one known element for another to yield predictable results for the integrity of the container by reducing the adverse effects of welds and improved load distribution, as taught by Minshall et al and as also known by any of ordinary skill in the art of connectors. See MPEP 2141, section III, rationale B.

On claim 3: in the above combination of Machado et al and Minshall each of the first rods (19 with or without 32, 33) has an opening and the attachment means further comprises at least one pin 50, wherein the openings of at least one respective pair of the first rods mounted in respective ones of the recesses of the first and second ones of

the tubes are axially aligned (Figures 2-3), wherein the at least one pin 50 is inserted through the openings of the at least one respective pair of the first rods (page 6, l. 25+).

*On claim 4:* In said combined invention, the rods further comprise at least one first rod and at least one second rods being (19; or 19 with 32, 33) (by Minshall et al), the at least one first rod being mounted in a corresponding at least one of the recesses (as defined by the corner areas devoid of 54 (Fig. 5 of Machado et al) of the first one of the tubes and the at least one second rod being mounted in a corresponding at least one of the recesses of the second one of the tubes, the at least one first rod engaging a respective one of the recesses of the second one of the tubes and the at least one second rod engaging a respective one of the recesses of the first one of the tubes when the first side wall of the first one of the tubes and the first side wall of the second one of the tubes are in substantial alignment, and the second side wall of the first one of the tubes and the second side wall of the second one of the tubes are in substantial alignment.

*On claim 5:* the container further comprises a first and second set of the tubes, wherein the second rods are mounted on the tubes of the first set, wherein each of the second rods of the first set of tubes engages a respective one of the tubes in the second set of tubes.

*On claim 6:* the further limitation defined by this claim fails to further limit the claimed invention, but instead merely defines "developed cell".

*On claim 7:* in the combined invention the outward main surfaces of 34 meet the further limitation of this claim (see Figures 4-5 and description, col. 3, l. 28+).

*On claim 8: the combined invention by Machado et al and Minshall as defined above teach* a container for storing or transporting spent nuclear fuel, the container comprising:

a plurality of tubes C (see Machado et al, Figure 4) that receive spent nuclear fuel, each of the plurality of tubes having a continuous inner sidewall (Figure 4);

a plurality of first rods (= projections 19, with or without grooves 32, 33 of Minshall et al) being mounted at a point where each respective one of the tubes abuts against another one of the tubes (see Figures 4 and 5) , each of said first rods having an opening (opening through which pin 50 slides), wherein each respective one of the first rods is mounted in a recess (as defined above with reference to the recess formed by the incomplete coverage by elements 54 of the underlying main outer surface of 34 in particular) of both a first one of the tubes and a second one of the tubes, wherein each of the rods comprises at least one outer wall, the at least one outer wall of each of the rods contacting the recesses (at least indirectly) of both the first and second ones of the tubes;

at least one pin 50;

wherein the openings of respective ones of the first rods mounted on the first one of the tubes are substantially aligned with the openings of respective ones of the first rods mounted on the second one of the tubes (substantial

alignment is in evidence because the pin 50 goes straight through said openings);

the at least one pin extends through the aligned ones of the openings of the first rods, thereby linking respective ones of the tubes together; and wherein each one of the respective ones of the first rods mate with a corresponding recess in the second one of the tubes when the openings of the respective ones of the first rods mounted in the recesses in the first one of the tubes are substantially aligned with the openings of the respective ones of the first rods mounted on the second one of the tubes (Figures 1-5 and p. 2, l. 5-10).

The obviousness argument as set forth for claim 1 holds verbatim also for this independent claim for the same reasons, herewith included by reference in its entirety.

*On claim 9:* the at least one pin 50 is captured by one of the first rods 19. See Figures 3-5.

*On claim 10:* the at least one pin 50 comprises a head portion (the portion of 50 above projection 19; Figure 3, central pin) and a body portion (the remainder of 50), the body portion extending through the openings of the aligned ones of the first rods and the head portion resting against one of the first rods.

*On claim 13:* in the combined invention the first and second tubes are met by tubes C and O in Machado et al. See Figure 4 and col. 3, l. 47 – col. 4, l. 2).

*On claim 14:* each of the tubes has four sidewalls and four corners (Figure 4, col. 3, l. 47 – col. 4, l. 2) defining a rectangular cross section, the plurality of recesses (defined by 34/54 as explained in the rejection of claim 1) being formed in the corners of the tubes.

*On claim 15:* the tubes of Machado et al are arranged in an alternating pattern (see Figure 4) and are linked together in the corners (Figures 1-5), wherein a sidewall of a first one of the tubes is in substantial alignment with a sidewall of a second one of the tubes (Figures 4 and 5, and descriptions thereof).

*On claim 16:* the further limitation defined by this claim fails to further limit the claimed invention, but instead merely defines "developed cell".

*On claim 17:* in the combined invention the outward main surfaces of 34 meet the further limitation of this claim (see Figures 4-5 and description, col. 3, l. 28+).

*On claim 18:* the combined invention as defined above also teaches a container for storing spent nuclear fuel, the container comprising: a plurality of tubes (C in Machado et al) that receive spent nuclear fuel assemblies, each of the tubes having a plurality of recesses (defined as described above, i.e., by recesses in 34/54) and a continuous inner sidewall (Figure 4); and with the substitution of wire 68 with welds of Machado et al by pins 50 and rods 19 as taught by Minshall et al, a plurality of first rods being mounted in respective ones of the recesses; and wherein at least one first rod mounted on a respective one of the tubes is attached to at least one of the first rods mounted on at least one second one of the tubes, thereby linking the respective one of

the tubes and the at least one second one of the tubes together (see Figures 3-5), wherein each of the first rods is seated in both a first one of the recesses of the respective one of the tubes and a second one of the recesses of the at least one second one of the tubes, and each of the rods comprises at least one outer wall, the at least one outer wall of each of the rods contacting both the first and second ones of the recesses (see Figures 3-5).

The obviousness argument as set forth for claim 1 holds verbatim also for this independent claim for the same reasons, herewith included by reference in its entirety.

*On claim 19:* each of the first rods 19 has an opening and respective pairs of the first rods are attached to each other by axially aligning the openings of the respective pairs of the first rods and extending a pin 50 through the openings of each of the respective pairs of the first rods (Figures 1-5 in Minshall et al).

*On claim 20:* the at least one pin 50 comprises a head portion (the portion of 50 above projection 19; Figure 3, central pin) and a body portion (the remainder of 50), the body portion extending through the openings of the aligned ones of the first rods and the head portion resting against one of the first rods.

*On claim 21:* the pin 50 by Minshall et al is captured by one of the first rods 19 (Figures 3-5).

*On claim 22:* each of the tubes C in Machado et al has four sidewalls and four corners defining a rectangular cross section (Figure 4), the recesses being formed along at least one of the corners of the tubes (recesses as defined by 34/54; see Figure



5 and discussion under claim 1 above) and the first rods 19 by Minshall et al being mounted in the plurality of recesses along the at least one of the corners of the tubes (C in Machado et al, 3 in Minshall et al) (note said corners are in the recesses defined by 34/54).

*On claim 23:* the tubes of Machado et al are arranged in an alternating pattern (see Figure 4) and are linked together in the corners (Figures 1-5), wherein a sidewall of a first one of the tubes is in substantial alignment with a sidewall of a second one of the tubes (Figures 4 and 5, and descriptions thereof).

*On claim 24:* the container of the combined invention further comprises at least one second rod being mounted in the recesses of respective ones of the tubes, the at least one second rod mounted in the recess of a respective one of the tubes engaging the recess of a remaining one of tubes when the tubes are linked together (see plurality of rods 19; Figures 1-5).

*On claim 25:* the plurality of tubes of the combined invention comprises a first set of tubes O (see Machado et al, Figure 4 and description) and a second set of tubes C (loc.cit.), wherein the connection in Machado et al is between tubes C, said connections in the combined invention comprising the second rods 19 which are mounted in each one of the tubes in the second set of tubes C.

*On claim 26:* the further limitation defined by this claim fails to further limit the claimed invention, but instead merely defines "developed cell".

*On claim 27:* In the combined invention respective ones of the tubes includes a plurality of flat load bearing surfaces at the corners of the tubes (see flat load bearing surfaces of 34 in Figure 5: right-hand main surface of left-hand 34, and upper main flat portion of 34 on the right hand side), the plurality of flat load bearing surfaces on a respective one of the tubes engaging the flat bearing surfaces on a remaining one of the tubes (said engaging is direct in the combined invention in which there is no welding applied, and indirect in Machado et al).

*On claim 28:* The combined invention as defined above also teaches the container to comprise a plurality of tubes (C in Machado et al) that receive spent nuclear fuel rods, each of the tubes having four sidewalls forming a continuous inner sidewall (Figure 4 in Machado et al) and four corners defining a rectangular cross section (loc.cit.), each of the tubes having a plurality of recesses (formed by 34/54 as described above) along at least one of the corners (Figure 5) and a plurality of flat load bearing surfaces (outward main surfaces of 34) along at least one of the corners (Figure 5; Machado et al); a plurality of first rods (19 in Minshall et al) being mounted in the recesses of the tubes (because implemented in the corners), wherein respective pairs of the first rods are attached to each other (through pins 50), thereby linking the tubes together, and each of the first rods is seated in the recesses of two of the tubes (because located at the corners), wherein each of the rods comprises at least one outer wall (outer wall of 19), the at least one outer wall of each of the rods contacting the recesses of two of the tubes (being within the recesses); and wherein the tubes are

linked to each other at the corners such that the flat load bearing surfaces on respective pairs of the tubes abut against each other (Figures 4-5).

The obviousness argument as set forth for claim 1 holds verbatim also for this independent claim for the same reasons, herewith included by reference in its entirety.

*On claim 29:* each of the first rods 19 in the combined invention includes an opening, wherein the openings of respective pairs of the first rods of adjacent ones of the tubes (vertically displaced rods, each of which can be said to belong to two abutting sidewalls) are aligned so that a pin 50 may be extended therethrough, thereby attaching the respective pairs of the first rods 19 together (see Figures 1-5 in Minshall et al).

*On claim 30:* the at least one pin 50 comprises a head portion (the portion of 50 above projection 19; Figure 3, central pin) and a body portion (the remainder of 50), the body portion extending through the openings of the aligned ones of the first rods and the head portion resting against one of the first rods.

*On claim 31:* the container of the combined invention further comprises at least one second rod being mounted in the recesses of respective ones of the tubes, the at least one second rod mounted in the recess of a respective one of the tubes engaging the recess of a remaining one of tubes when the tubes are linked together (see plurality of rods 19; Figures 1-5).

*On claim 32:* the container of claim 31, further comprises a first set of the tubes C and a second set of the tubes O, wherein the second rods 19 are mounted in each one of the first set of tubes C.

*On claim 33:* the further limitation defined by this claim fails to further limit the claimed invention, but instead merely defines "developed cell".

*On claim 34:* the pin 50 is captured by one of the first rods 19.

*On claim 48:* Referring to the same combination of teachings as defined above (Machado et al modified through the substitution of welds and adjacent element 68 by the rods and pins 19 and 50, respectively), said combination also teaches an apparatus (spent fuel rack of Machado et al) for the storage and transport of spent nuclear fuel, comprising:

an array of tubes C (Machado et al, Figure 4 and col. 3, l. 29+) having a continuous inner sidewall (Fig. 4);

a container 14 (col. 3, l. 1+), wherein the array of tubes are disposed in the container (Figs. 4 and 7 and loc.cit.) and the array of tubes contacts at least one side wall of the container (Figure 10, showing contact of 14 with 34);

a plurality of couplings 50/19/19 or 50/19-32-33/19-32-33/ (Minshall et al, loc.cit. and page 6; Figures 1-7) between adjacent pairs of the tubes, wherein each of the couplings comprises:

a first rod 19 (or 19-32-33, upper 19 centrally in Figure 3 with or without associated 32/33 at the same altitude) disposed on a first one of the tubes;

a second rod 19 (element 19, etc., directly vertically underneath said first rod)

attached to a second one of the tubes (note that each element 19 is attached to at least two tubes as shown by Figures 4-7);

the first rod being disposed in recesses formed in the outer surfaces of both the first and second ones of the tubes (because the rods are substitutes for element 68 positioned in recesses as defined above in relation to 34/54), and the second rod being disposed in the recesses formed in the outer surfaces of both the first and second ones of the tubes (loc.cit.),

wherein each of the first and second rods comprises at least one outer wall (see Figures 1 and 2), the at least one outer wall of each of the first and second rods contacting the recesses (because they replace elements 68 in Machado et al which contact the recesses as they are in said recesses) formed in the outer surfaces of both the first and second ones of the tubes (contacting is indirect in Machado et al through the presence of welds, while said welds are removed in the combination as defined above following Minshall et al);

the first and second rods each having an opening along a length of the first and second rods; and a pin (50 in Minshall et al, loc.cit.) extending through the openings of the first and second rods; and

wherein a horizontal bearing load applied to the array of tubes is transferred through the tubes and the couplings to the at least one side wall of the container (because the contact between said tubes and couplings and between said couplings

and the at least one sidewall inherently causes any load applied to the tubes to be transferred to the couplings, and through the couplings to the at least one sidewall).

The obviousness argument as set forth for claim 1 holds verbatim also for this independent claim for the same reasons, herewith included by reference in its entirety.

*On claim 49:* each of the tubes further comprises a plurality of side walls, wherein at least one of the side walls of a respective one of the tubes and a side wall of a second one of the tubes are in substantial alignment (see Figure 4, tubes C, and Figure 5, where the sidewalls comprise elements 34 as sidewalls belonging to different tubes C but in substantial alignment).

*On claim 50:* in the combined invention as defined above, the apparatus of claim 48, wherein each of the tubes in the adjacent pairs of tubes C further comprise at least two side walls joined along a corner (according to the couplings as defined above and as taught by Minshall et al), and, (Examiner Note: sic: why the comma? See 112, 2<sup>nd</sup> above: comma is ignored in examination) a flat bearing surface disposed in at least a portion of the corner, wherein for each of the adjacent pairs of tubes, a first one of the flat bearing surfaces contacts a second one of the flat bearing surfaces (Figures 4-5 in Minshall et al).

*On claim 53:* the further limitation defined by this claim limits the method in which the apparatus is made, rather than the apparatus itself, except through possible inherent consequences of the method on structure. Specifically, the limitation is only of patentable weight in as much as the method steps distinguish the final structure, and to

the extent not impacting final structure are taken to be product-by-process limitations and non-limiting. A product by process claim is directed to the product per se, no matter how they are actually made. See *In re Fessman*, 180 USPQ 324, 326 (CCPA 1974); *In re Marosi et al*, 218 USPQ 289, 292 (Fed. Cir. 1983), and *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985), all of which make clear that it is the patentability of the final structure of the product “gleaned” from the process steps that must be determined in a “product-by-process” claim, and not the patentability of the process. See also MPEP 2113. Moreover, an old or obvious product produced by a new method is not a patentable product, whether claimed in “product by process” claims or not. Reference is also made to the rejection under 35 USC 112, first and second paragraph, triggered by the introduction of matter not disclosed in the original specification including original claims, and as set forth above under sections 5 and x.

*On claim 54:* the recesses are formed in a plurality of corners in the outer surfaces of the tubes (Figure 5 in Machado et al, and in this respect loc.cit.).

*On claim 55:* The term “rigid” has not been introduced in the original specification in this regard, and hence the general meaning of “rigid” or rigidly” applied, which comprises the meaning “precise and accurate in procedure”, which certainly is met through the passage of the pin through said rods which is disclosed to cause the plates (sidewalls) to be “firmly interlocked” (p. 7, l. 17+ in Minshall et al).

*On claim 57:* the cross-sectional shape of the tubes is a square or rectangle (Machado et al, Fig. 4).

*On claim 58:* the array of tubes C forms a cell wherein the tubes are arranged in an alternating pattern in the cell (Figure 4 and description).

*On claim 69:* The combined invention by Machado et al and Minshall et al as defined in the discussion of claim 1, teaches an apparatus capable of being used for the dry storage and transport of spent nuclear fuel, comprising:

a plurality of tubes C disposed in a container 14, each of the plurality of tubes having a continuous inner sidewall 34/54 (Figure 4 in Machado et al));

a plurality of recesses as defined by the portions of the walls of the tubes not covered by 54 (Machado et al), each recess being formed in a wall 34/54 of a respective one of the tubes;

a plurality of rods (19 or 19 with grooves 32,33 (p. 6, l. 10+) according to Minshall et al), each rod being disposed within a first one of the recesses (see recesses as taught by Machado et al, and also recesses in Minshall et al (p. 2, l. 6+) formed in a first one of the tubes;

each of the rods has an outer wall that contacts a second one of recesses formed in a second one of the tubes when the tubes are assembled in the container (because the rods substitute for elements 68 in Machado et al without their welds adjacent thereto);  
and



each of the recesses being configured (i.e., being structurally capable) to receive the rod from a lateral direction with respect to a longitudinal length of a respective one of the tubes to facilitate a horizontal assembly of the tubes to each other. Although this limitation limits a method of making within what has been formulated as a limitation of intended use, the capability of making the apparatus in the claimed manner is ensured by the possibility to apply the rods 19 as taught by Minshall et al by introducing them through lateral movement towards the sidewalls of the tubes in the recesses of the tubes C in Machado et al.

[Examiner Note: the limitation "configured to receive" generally indicates only that the structure is such as to render the claimed reception to be within the capabilities of the structure. Therefore, said limitation generally indicates structural configuration so as to be capable of performing an intended use. Applicant is reminded that intended use and other types of functional language must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963). In the underlying case, the implied capability is not even pertinent to the final structure, but instead to an intermediate structure wherein the rod associated with any of the claimed recesses has not yet been placed in final position, but instead the recess is about to receive the rod. Therefore, the capability does not even pertain to the claimed apparatus but only to its method of making. In this regard applicant is reminded that the limitation "to receive from the rod" is only of patentable weight in as much as the method steps distinguish the final structure, and to the extent not impacting final structure are taken to be product-by-process limitations and non-limiting. A

product by process claim is directed to the product per se, no matter how they are actually made. See *In re Fessman*, 180 USPQ 324, 326 (CCPA 1974); *In re Marosi et al*, 218 USPQ 289, 292 (Fed. Cir. 1983), and *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985), all of which make clear that it is the patentability of the final structure of the product "gleaned" from the process steps that must be determined in a "product-by-process" claim, and not the patentability of the process. See also MPEP 2113. Moreover, an old or obvious product produced by a new method is not a patentable product, whether claimed in "product by process" claims or not].

The obviousness argument as set forth for claim 1 holds verbatim also for this independent claim for the same reasons, herewith included by reference in its entirety.

*On claim 70:* in the combined invention, respective ones of the rods are attached to corresponding one of the recesses (this is true for the attachment of rods 68 with welds to the recesses in Machado et al, and is true for the combined invention wherein the rods 68 with welds are substituted by the rods of Minshall et al (see p. 6, l. 1-8); a plurality of pins 50; and where the respective one of the rods further comprise a socket to receive one of the pins (the openings of the rods meet "socket").

*On claim 71:* in the combined invention each of the pins 50 are disposed into a pair of the sockets (two segments 19, e.g., Fig. 3). The limitation "to connect a respective pair of the tubes" limits intended use, not the structure and carries patentable weight only in as much as the apparatus is capable of performing said intended use, with reference to the above discussion of limitations of intended use: if the prior art structure is capable of performing the intended use, then it meets the claim. *In re Casey*, 152 USPQ 235 (CCPA 1967); *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). *In*

the underlying case the pins so disposed do connect a respective pair of the tubes as they interlock "plates", i.e., sidewalls, of different tubes (e.g., 5 and 6) (see Minshall et al, p. 5, l. 22+).

14. **Claim 56** is rejected under 35 U.S.C. 103(a) as being unpatentable over Machado et al and Minshall et al as applied to claim 55 above, and further in view of Forterre (US 5,131,868). As detailed above, claim 55 is unpatentable over Machado et al in view of Minshall et al. Neither Machado et al nor Minshall et al teach the pin to at least one of the rods by a weld positioned so as not to be subject to the horizontal bearing load. However, although the pin 50 in the combined invention is not necessarily welded to the rods 19 it would have been obvious to one of ordinary skill in the art to provide additional axial stability to the pin-rod system through welding the pins to the rods because welding is a standard and utterly conventional method of locking separate structural component in position, and has long been recognized in the art of connectors and metal work as a reliable method to secure a pin in a passageway, as witnessed by Forterre (see col. 2, l. 3+ and his claim 3, e.g.). The axial locking thus achieved in the combined invention is completely independent from the force balance in the lateral direction that is determined by the pin-rod system as a whole, because the respective forces are orthogonal to each other. Furthermore, the very (and only) purpose of the locking pins 50 in Minchal et al is to keep the rods in place and aligned, i.e., to lock said rods in place. It would thus have been obvious to one of ordinary skill in the art to improve the locking achieved by the insertion of locking pins 50 by additionally welding said locking pins to the very structure they are to keep aligned, i.e., to the rods 19.

***Response to Arguments***

Appellants' arguments filed 11/25/09 have been fully considered but they are not fully persuasive.

Those grounds of rejections not maintained in the current Office action are withdrawn in light of appellant's arguments. Regarding the objection to the Drawings is maintained. In response to applicant's traverse of the objection to the Drawings, as expressed in "Remarks", especially alleging that the Drawings need not be to scale, examiner disagrees with the conclusion attached to the lack of the need to have all drawings to scale. Instead, the problem has always been the incompatibility of Figures 5 and 8 while they are disclosed to illustrate the same embodiment. Examiner has concluded, however, that one of ordinary skill would understand that a lateral shift of the rods in Figure 5 can be made so as to ensure compatibility with Figure 8. The associated lack of enablement rejection has thus been overcome by appellant's argument.

Examiner informs that review of the application regrettably showed the need to include an art rejection as set forth above. Examiner notes that the three-pronged test for triggering 35 U.S.C. 112, sixth paragraph, is not met, and hence the "attachment means for attaching" need not be as construed to be as disclosed in light of 35 U.S.C. 112, sixth paragraph. Consequently, the Hoover Fence reference is not necessary, although examiner maintains that the Hoover Fence document is relevant *for the*

*problem to be solved, namely, a problem of connectors*, which has a much wider range of technology from which teachings must be considered than merely the nuclear field.

Examiner also draws attention to the finding that claims 51, 53 and 69-71 lack adequate written support due to the introduction of new matter, with reference to sections 5 -7 above.

The objection and rejections set forth above were prompted by the above considerations.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Soot (US 4,034,227) (made of record by applicant in IDS filed 6/17/04);
- Soot (US 4,088,897) (made of record by applicant in IDS filed 6/17/04);
- Bosshard (US 4,630,738) (made of record by applicant in IDS filed 6/17/04).
- Hoover Fence Co document as made of record by previous examiner.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHANNES P. MONDT whose telephone number is (571)272-1919. The examiner can normally be reached on 8:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack W. Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JOHANNES P MONDT/  
Primary Examiner, Art Unit 3663

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